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9 February 2000

U.S. APPLICATION NO. (If known see 37 C.F.R. 1.5)

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(EARLIEST) PRIORITY DATE CLAIMED  
9 February 1999

## TITLE OF INVENTION

INFORMATION DISTRIBUTION SYSTEM AND METHOD,  
TERMINAL APPARATUS, SERVER APPARATUS, DATA RECEPTION  
METHOD, AND DATA TRANSMISSION METHOD

## APPLICANTS FOR DO/EO/US

Kazuyuki SAKODA and Mitsuhiro SUZUKI

Applicants herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

- This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
- This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
- This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
- A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
- A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - is transmitted herewith (required only if not transmitted by the International Bureau).
  - has been transmitted by the International Bureau.
  - is not required, as the application was filed in the United States Receiving Office (RO/US).
- A translation of the International Application into English (35 U.S.C. 371(c)(2)), including 8 sheets of formal drawings and a copy of the International Search Report.
- Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - are transmitted herewith (required only if not transmitted by the International Bureau).
  - have been transmitted by the International Bureau.
  - have not been made; however, the time limit for making such amendments has NOT expired.
  - have not been made and will not be made.
- A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
- An oath or declaration of the inventors (35 U.S.C. 371(c)(4)).
- The annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

## Items 11. to 16. below concern other document(s) or information included:

- An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
- An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
- A FIRST preliminary amendment.
- A SECOND or SUBSEQUENT preliminary amendment.
- A substitute specification.
- A change of power of attorney and/or address letter.
- Other items or information:

PCT/IB/301, 304, 308

PCT/RO/101

References for IDS

## EXPRESS MAIL

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U.S. APPLICATION NO.(if known, see 37 C.F.R. 1.50)

09/647964

INTERNATIONAL APPLICATION NO  
PCT/JP00/00705ATTORNEY'S DOCKET NO.  
450118-0233017.  The following fees are submitted:

(CALCULATIONS /PTO USE ONLY)

**Basic National Fee (37 CFR 1.492(a)(1)-(5):**Neither international preliminary examination fee (37 CFR 1.482) nor  
international search fee (37 CFR 1.445(a)(2) paid to USPTO and  
International Search Report not prepared by the EPO or JPO... \$ 1000.00International preliminary examination fee (37 C.F.R. 1.482)  
not paid to USPTO but International Search Report prepared  
by the EPO or JPO..... \$ 860.00International preliminary examination fee paid to USPTO (37 CFR 1.482)  
Not paid to USPTO but international search fee (37 CFR 1.445(a)(2))  
paid to USPTO (37 CFR 1.445(a)(2))..... \$ 710.00International preliminary examination fee paid to USPTO (37 CFR 1.482)  
But all claims did not satisfy provisions of PCT Article 33(1)-(4)..... \$ 690.00International preliminary examination fee paid to USPTO (37 CFR 1.482)  
and all claims satisfied provisions of PCT Article 33(1)-(4)..... \$ 100.00

ENTER APPROPRIATE BASIC FEE AMOUNT = (\$860.00)

Surcharge of \$130.00 for furnishing the oath or declaration later than  20  30 (\$ /  
months from the earliest claimed priority date (37 CFR 1.492(e)).

47. Claims	/Number Filed	/	Number Extra	/Rate	(
Total Claims	/ 47 - 20 =	/	27	/X \$18.00	(\$ 486.00
Independent Claims	/ 6 - 3 =	/	3	/X \$80.00	(\$ 240.00
Multiple dependent claim(s) (if applicable)				/+ \$260.00	(\$

TOTAL OF ABOVE CALCULATIONS = (\$ 1,586.00)

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity ( /  
statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28). ( /

SUBTOTAL = (\$ 1,586.00)

Processing fee of \$130.00 for furnishing the English translation later than ( /  
 20  30 months from the earliest claimed priority date (37 CFR 1.492(f)).+ (\$ /

TOTAL NATIONAL FEE = (\$ 1,586.00)

Fee for recording the enclosed assignments (37 CFR 1.21(h)). The assignment  
must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property + (\$ /

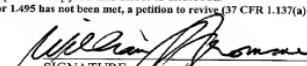
TOTAL FEES ENCLOSED = (\$ 1,586.00)

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a.  Our check in the amount of **\$1,586.00** to cover the above fees is enclosed.  
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 NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and  
     granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

WILLIAM S. FROMMER  
 FROMMER LAWRENCE & HAUG LLP  
 745 FIFTH AVENUE  
 NEW YORK, NEW YORK 10151


 SIGNATURE

WILLIAM S. FROMMER  
 NAME

25,506  
 REGISTRATION NUMBER

Dated: October 6, 2000

## DESCRIPTION

INFORMATION DISTRIBUTION SYSTEM AND METHOD, TERMINAL APPARATUS, SERVER APPARATUS, DATA RECEPTION METHOD, AND  
5 DATA TRANSMISSION METHOD

## TECHNICAL FIELD

The present invention relates to an information distribution system and method, a terminal apparatus, a server apparatus, a data reception method, and a data transmission method able to be applied to a network system such as a cellular wireless communication system and particularly capable of averaging a traffic load over time and efficiently utilizing a communication infrastructure.

## BACKGROUND ART

As an example of a general communication system for distributing information in the related art, web browsing over the Internet can be mentioned.

A communication procedure in web browsing of the related art is shown in Fig. 1.

In this procedure, when a terminal station sends a demand for provision of information (demand for content) 25 to a contents server, the contents server immediately

responds to this and transmits the requested information content (requested content) to the terminal station.

In the above communication system, however, since it is based on real-time communication immediately

5 responding to a request for providing information, for example as shown in Fig. 2, the traffic load widely varies such as with the amount sharply increasing during a certain time band and oppositely the amount largely decreasing during a time band, for example, at the night.

10 Accordingly, it suffers from the disadvantage that communication facilities are not in use during the night time and other time bands when the communication traffic is low, so the communication facilities are not efficiently used.

15 Further, it suffers from the disadvantage of the difficulty in sufficient improvement of the efficiency of utilization of the communication facilities because a network operator often determines a traffic load of a communication system in order to provide an acceptable 20 quality of service during the time bands when the traffic load is large.

#### DISCLOSURE OF THE INVENTION

An object of the present invention is to provide an 25 information distribution system and method capable of

averaging a traffic load over time and efficiently utilizing communication facilities.

Another object of the present invention is to provide an (a) terminal apparatus, (b) server apparatus, 5 (c) data reception method, and (d) data transmission method used for such an information distribution system and capable of contributing to the averaging of the traffic load in the network and efficient utilization of communication facilities.

10 According to a first aspect of the present invention, there is provided an information distribution system transmitting information based on a demand from a terminal apparatus from a server apparatus to the terminal apparatus, wherein said server apparatus 15 comprises a first transceiver for transmission to the terminal apparatus and a first controller for scheduling a point of time for distribution based on a state of a communication line used for distribution of information in accordance with a request signal requesting 20 information from the terminal apparatus received at said transceiver and controlling the system for distribution of information for said request signal to the terminal apparatus through the transceiver at the scheduled point of time and said terminal apparatus comprises a second 25 transceiver for communication with a server apparatus and

a second controller for generating a request signal for requesting the distribution of desired information, controlling the system for transmission of the requested information to said server through said second  
5 transceiver, and controlling the system for reception of said information distributed by said server apparatus in a period of time determined by said server apparatus with respect to said request signal.

According to a second aspect of the present  
10 invention, there is provided a terminal apparatus receiving distribution of information from a server apparatus, said terminal apparatus receiving distribution of information from a server apparatus comprising a transceiver for transmission to the server apparatus and  
15 a controller for generating a request signal for requesting the distribution of desired information, controlling the system for transmission of the requested information to said server through said transceiver, and controlling the system for reception of said information distributed by said server apparatus in a period of time determined by said server apparatus with respect to said  
20 request signal.

According to a third aspect of the present invention, there is provided a server apparatus  
25 transmitting information based on a demand from a

terminal apparatus, said server apparatus transmitting information based on a demand from a terminal apparatus comprising a transceiver for transmission to the terminal apparatus and a controller for scheduling a point of time 5 for distribution based on a state of a communication line used for distribution of information in accordance with a request signal requesting information from the terminal apparatus received at said transceiver and controlling the system for distribution of information for said 10 request signal to the terminal apparatus through the transceiver at the scheduled point of time.

According to a fourth aspect of the present invention, there is provided an information distribution method for transmitting information based on a request 15 from a terminal apparatus from a server apparatus to the terminal apparatus, said information distribution method for transmitting information based on a request from a terminal apparatus from a server apparatus to the terminal apparatus comprising the steps of having said 20 terminal apparatus generates a request signal requesting distribution of desired information; transmitting said request signal from said terminal apparatus to said server; having said server apparatus schedule a point of time for distribution based on a state of a communication 25 line to be used for the distribution of information in

accordance with a request signal requesting information from said terminal apparatus; distributing information for said request signal from said server apparatus to said terminal apparatus at the scheduled point of time; 5 and having said terminal apparatus receive said information distributed from said server apparatus.

According to a fifth aspect of the present invention, there is provided a data reception method for receiving distribution of information from a server apparatus, said data reception method for receiving distribution of information from a server apparatus comprising the steps of generating a request signal requesting distribution of desired information; transmitting said requested information to said server; and receiving said information distributed by said server apparatus in a period of time determined by said server apparatus for said request signal.

According to a sixth aspect of the present invention, there is provided a data transmission method 20 for transmitting information based on a request from a terminal apparatus, said data transmission method for transmitting information based on a request from a terminal apparatus comprising the steps of receiving a request signal requesting information from a terminal 25 apparatus; scheduling a point of time for distribution

based on a state of a communication line used for distribution of information; and transmitting the information for the request signal to the terminal apparatus at the scheduled point of time.

5

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a view of a communication procedure in a communication system for performing conventional general information distribution.

10 Figure 2 is a view of fluctuations in a traffic load over a day in a conventional general communication system.

Figure 3 is a view of a network configuration of a cellular wireless communication system of an embodiment 15 of the present invention.

Figure 4 is a block diagram of the configuration of a contents server of the cellular wireless communication system shown in Fig. 3.

20 Figure 5 is a block diagram of the configuration of a terminal station of the cellular wireless communication system shown in Fig. 3.

Figure 6 is a view of a basic procedure of information distribution in the cellular wireless communication system shown in Fig. 3.

25 Figure 7 is a view of fluctuations in a traffic load

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over a day in the cellular wireless communication system shown in Fig. 3.

BEST MODE FOR CARRYING OUT THE INVENTION

## First Embodiment

5 An embodiment of the present invention will be explained with reference to Figs. 3 to 7.

In the present embodiment, the present invention will be explained by giving as an example a cellular wireless communication system.

10 First, the network configuration of a cellular  
wireless communication system of the present embodiment  
will be explained with reference to Fig. 3.

Figure 3 is a view of the network configuration of the cellular wireless communication system of the present embodiment.

A cellular wireless communication system 1 of the present embodiment has the configuration of arranging in layers as shown in the figures a contents server 10, a plurality of network nodes 20<sub>1</sub> to 20<sub>n</sub>, and a plurality of terminal stations 30<sub>1</sub> to 30<sub>m</sub>. Information is transmitted from the contents server 10 to the respective terminal stations 30<sub>j</sub> (j=1 to m) via the network nodes 20<sub>i</sub> (i=1 to n).

25 network nodes 20, to 20, correspond to an MTSO (Mobile

Telephone Switching Office) or a wireless base station CS (Cell Site) etc. Therefore, communication between the network nodes 20<sub>i</sub> (i=1 to n) and the terminal stations 30<sub>j</sub> is maintained by the control carried out in an 5 existing cellular wireless communication system.

The parts of the cellular wireless communication system 1 will be explained in further detail below.

The contents server 10 is a server apparatus storing desired information to be distributed and suitably 10 distributes it in accordance with requests. The contents server 10 is specifically configured by, for example, a work station and a file server apparatus having a communication interface.

The contents server 10 has a processing module for 15 realizing functions related to information distribution described below and thereby performs desired processing.

First, the contents server 10 receives a distribution request of any information transmitted from the respective terminal stations 30<sub>j</sub> of the cellular 20 wireless communication system 1 shown in Fig. 3. The distribution request includes contents information for specifying information requested, terminal information for specifying a terminal station 30<sub>j</sub>, and time limit information indicating a time limit of distribution.

25 When receiving a distribution request, the contents

server 10 judges whether or not it has the information requested and judges whether it is possible to distribute the information before the time indicated by the time limit information and thereby detects whether it can 5 respond to the distribution request and notifies the results to the terminal station 30.,.

Further, when it is found to be possible to distribute the desired information by this, the server refers to the information of the traffic load of the 10 network estimated and stored in advance to calculate the period of time where the traffic load of the network is small and thereby determines the period of time for distribution of the information, notifies this to the terminal station 30., and stores this as a distribution 15 schedule in the contents server 10.

Then, the contents server 10 successively distributes the information to the terminal station 30., in accordance with this stored distribution schedule.

Further, at the time of the information 20 distribution, the contents server 10 performs processing for charging the respective terminal stations 30., for the distribution of information. The charge for the distributed information is determined by a variety of conditions such as the type or amount of the distributed 25 information, the content of contracts for the information

distribution service, the distribution areas, and distribution time bands. Also, in the present embodiment, it is determined by whether there is freedom of selection of the time limit of distribution based on a designated 5 distribution time limit, usage conditions of communication resources based on a positional relationship with the terminal base station of a terminal station 30., etc.

Also, the contents server 10, regardless of 10 existence of a distribution request, suitably detects a communication state of the network system 1, that is, a traffic load (traffic load), and estimates a traffic load for different time bands.

Also, the server sets the communication expenses for 15 when distributing information based on the estimated traffic load. The communication expenses is set by for example region, by time bands, by time bands for individual regions, etc.

Information of the estimated traffic load, 20 communication expenses, etc. is stored in the contents server 10 and referred to at the time of determining the distribution period of time of the requested information. In addition, in some cases, it is transmitted to the terminal station 30., in advance and referred to at the 25 time when a user requests distribution.

The network nodes 20<sub>1</sub> are relay devices for substantially connecting the contents server 10 and the terminal stations 30<sub>j</sub> in accordance with a predetermined network topology. In Fig. 3, the layer of the network 5 nodes 20<sub>1</sub> forming the relay layer is made one layer for simplifying the figure, however, in an actual cellular wireless communication system 1, it is configured to have a plurality of layers.

The network nodes 20<sub>1</sub> suitably send distribution 10 requests of information from the terminal stations 30<sub>j</sub> to the contents server 10 and distribute information from the contents server 10 to the terminal stations 30<sub>j</sub>.

The terminal stations 30<sub>j</sub> are terminal apparatuses 15 comprised of cellular phones in the cellular wireless communication system 1 of the present embodiment. They are used by users for requesting distribution of information from the contents server 10 and performing mutual communication.

The configuration of the terminal stations 30<sub>j</sub> will 20 be explained in detail with reference to Fig. 2.

Figure 2 is a block diagram of the configuration of a terminal station 30<sub>j</sub>.

A terminal station 30<sub>j</sub> comprises a signal transceiver 31, a cellular controller 32, an information 25 controller 33, a storage 34, a display/command input

portion 35, a power supply circuit 36, and a timer 37.

Figure 4 is a block diagram of the configuration of the contents server 10.

The contents server 10 is comprised of a CPU 5 (central processing unit) 11, ROM (read only memory) 12, RAM (random access memory) 13, frame memory 14, display 15, input device 16, external storage 17, communications I/F (interface) 18, and bus 19.

The CPU 11 controls the contents server 10 based on 10 a processing program stored in the ROM 12.

The ROM 12 has a processing program for processing in the CPU 11. It stores a processing program in accordance with the information distribution routine explained below. The processing program is comprised of 15 control instructions for processing for judging if a request for information content has been received from a terminal station 30, based on that request, processing for generating a response to the terminal 30, based on the result of judgment, processing for scheduling 20 distribution of the information contents, processing for distributing the information contents to the terminal 30, processing for charging the terminal station 30, along with the distribution of information, etc.

The RAM 13 stores temporary processing data when the 25 CPU 11 is processing.

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The frame memory 14 stores the display data processed at the CPU 11. The display 15 is an apparatus for displaying the display data stored in the frame memory 14 and provides the necessary information to the 5 manager of the contents server 10. The input device 16 inputs necessary information from the manager of the contents server 10.

The external storage 17 is a randomly accessible information storage medium such as a magnetic disk or 10 optical disk and stores a plurality of information contents.

The communications I/F 18 is a communications interface for connecting the contents server 10 to the network 20., through a communications line and connecting 15 it to the terminal stations 30., through the network 20.. The contents server 10 transmits information contents and various control signals to the terminal stations 30., using the communications I/F 18.

The bus 19 connects circuits comprising the above 20 contents server 10 for the transmission of programs or data.

Note that the processing program of the present embodiment was comprised to be stored in the ROM 12, but may also be stored in the external storage 17 and be 25 transferred through the bus 19 to the RAM 13 at the time

of execution for execution by the CPU 11. Further, the communication I/F 18 may be comprised to be able to transmit and receive signals. The processing program may be received through a transmission line from an external terminal apparatus at the communication I/F 18, stored in the RAM 13 or external storage 17, and executed at the CPU 11.

That is, the contents server 10 may be loaded with the computer program for performing the above processing from a medium comprised of a magnetic disk, CD-ROM, or other information storage medium and also load it through the Internet, digital satellite, or other transmission medium for processing at the CPU 11.

Figure 5 is a block diagram of the configuration of a terminal apparatus 30...

A terminal station 30, comprises a signal transceiver 31, a cellular controller 32, an information controller 33, a storage 34, a display/command input portion 35, a power supply circuit 36, and a timer 37.

20 The signal transceiver 31 is a circuit for performing signal processing for communicating with a base station and generates and sends a communication signal of a desired protocol based on control by the cellular controller 32. Further, the transceiver decodes  
25 the received signal to a predetermined base band signal

and outputs it to the information controller 33 under the control of the cellular controller 32.

The cellular controller 32 controls the signal transceiver 31 so as that the terminal stations 30<sub>j</sub> can 5 suitably communicate in accordance with a predetermined protocol or supports the parts of the terminal stations 30<sub>j</sub> so as to be able to suitably maintain the conditions of the terminal stations 30<sub>j</sub>, relating to the communication by functions provided to the communication 10 system. For example, the cellular controller 32 detects whether or not a terminal station 30<sub>j</sub> is in an area able to communicate with the base station, namely, performs processing for detecting whether it is within a communication zone or outside the communication zone and 15 outputting the results to the display/command input portion 35.

The information controller 33 performs desired processing on information received via the signal transceiver 31 and information set by a user via the 20 display/command input portion 35.

The information controller 33 generates data requesting distribution of desired information based on user operation and outputs it to the signal transceiver 31.

25 Also, the information controller 33 stores a variety

of notice information etc. received from the contents server 10 in the storage 34 in accordance with need and displays it on the display/command input portion 35 so that a user can confirm it. The information of the 5 scheduled point of time of distribution from the contents server 10 for an information distribution request transmitted to the contents server 10, the communication costs by region/by time bands suitably distributed from the contents server 10, and other data are stored in the 10 storage 34 and displayed at the display/command input portion 35.

Further, the information controller 33 stores the information distributed from the contents server 10 to the storage 34, notifies a user that the information was 15 received via the display/command input portion 35, and, based on an operation of the user, successively reads the information from the storage 34 and displays it at the display/command input portion 35.

Furthermore, when a scheduled period of time of 20 distribution of the information is transmitted from the contents server 10 and the power supply of a terminal station 30, is turned off at the scheduled period of time, the information controller 33 sets a scheduled period of time to the timer 37 so that the power supply 25 automatically turns on.

The storage 34 is a compact storage storing a variety of information notified or distributed by the contents server 10, information set by a user via the display/command input portion 35, etc. and is suitably 5 accessed by the information controller 33. Specifically, the storage 34 is realized by a compact hard disk drive (HDD), an MD, a re-writeable CD, compact MO, flash memory, etc.

The display/command input portion 35 is an interface 10 between an internal circuit of the terminal station 30, and a user and comprises a liquid crystal display panel for displaying information for the user, a speaker for outputting the information by audio, and a key board for the user to operate.

15 The power supply circuit 36 is a circuit for supplying power to the portions of a terminal station 30,.

Usually, the supply and cut-off of power by the power supply circuit 36 is performed directly by the user 20 via the display/command input portion 35, however, the power supply circuit 36 of the present embodiment may be operated to supply and cut-off the power also by a signal from the timer 37. As a result, functions of automatic supply of power at the scheduled period of time of 25 distribution of information from the contents server 10

and automatic cut-off of the power after receiving information are realized.

The timer 37 is a timing means for constantly measuring the time and outputs a control signal for the 5 automatic supply and cut-off of power at the power supply circuit 36 based on a time set by the information controller 33.

Next, the operation of such a cellular wireless communication system 1 and the actual procedure of 10 information distribution will be explained.

Figure 6 shows a basic procedure of information distribution in the present invention.

A terminal station 30., transmits information for demanding distribution of certain information contents to 15 the contents server 10 (demand for contents). The information includes, in addition to terminal information including an ID for specifying the terminal station 30., and demanded content information expressing the content of the information contents requested, time limit 20 information expressing the deadline for distribution of the information, that is, the time limit of distribution. The request information is transferred to the contents server 10 via a network node (CS) 20.

The contents server 10 receives the request 25 information transmitted from the terminal station 30.,

verifies the terminal station 30<sub>j</sub> and, when completes this normally, checks whether or not the requested information can be distributed under the demanded conditions. That is, it judges if it has the requested 5 information contents and judges if it can distribute the information contents by the time indicated by the time limit for distribution.

Then, when the requested information is able to be provided, the terminal station 30<sub>j</sub> is notified that the 10 demand was received (ACK).

Next, the contents server 10 estimates the time band where the traffic load is small in the communication system in the period until the deadline of the information distribution in the demand and again pages 15 the terminal station 30<sub>j</sub>, requesting the distribution of the information contents. If the terminal station 30<sub>j</sub> is in a state able to receive the information contents (ACK), it transmits the requested information contents via the network node 20<sub>i</sub> to the terminal station 30<sub>j</sub>.

20 When the terminal station 30<sub>j</sub> normally completes reception of the information contents, it transmits an acknowledgment to the effect of completing the reception (ACK) to the contents server 10, whereby all procedures of transmission and reception end.

25 Second Embodiment

Several modes of information distribution will be explained next.

First, a mode where the contents server 10 notifies the terminal servers 30<sub>j</sub> in advance of the time band for 5 transfer of information contents as explained above will be explained.

In this case, the ACK signal sent from the contents server 10 to a terminal server 30<sub>j</sub> for a demand for information distribution includes information of the 10 time band during which the contents server 10 will transmit the information contents to the terminal station 30<sub>j</sub>, demanding distribution.

The contents server 10 which received the demand for information distribution from the terminal station 30<sub>j</sub>, 15 calculates the time band estimated to have less communications traffic during the time until the informed deadline based on results of operations up to then and the transmission schedule of the information contents received until then. Then, it includes the information of 20 the scheduled point of time of distribution determined based on the calculated time band in the above ACK.

By the transfer of the ACK to the terminal station 30<sub>j</sub>, it is possible for the terminal station 30<sub>j</sub> to learn when the information will be distributed.

25 The terminal station 30<sub>j</sub> displays the point of time

scheduled for distribution of the information contents to the user and makes the user prepare for receiving the information contents during the time band.

Then, the contents server 10 again pages the 5 terminal station 30<sub>j</sub> at the point of time notified in advance to the terminal station 30<sub>j</sub>, and distributes the information contents by the above procedure.

In the above mode of transfer of information contents, the power supply of the terminal station 30<sub>j</sub>, 10 may be controlled in accordance with the point of time of transfer of the information contents.

A terminal station 30<sub>j</sub> is provided internally with a timer 37 which is constantly in operation even when the power supply of the terminal station 30<sub>j</sub> is turned off. 15 Therefore, when the power supply of the terminal station 30<sub>j</sub> is turned off at the scheduled point of time of distribution of the information contents notified by the contents server 10, the timer 37 outputs a trigger signal to the power supply circuit 36 to automatically 20 turn on the power supply of the terminal station 30<sub>j</sub>, and give the initial settings required for receiving the information contents transmitted from the contents server 10.

The contents server 10 transmits in the same way as 25 the above the information contents demanded to be

distributed to the terminal station 30<sub>j</sub> when the point of time notified in advance arrives, so the terminal station 30<sub>j</sub> receives the same.

By configuring the terminal station in the above 5 way, it becomes possible to turn off the power supply in usual times to keep down the power consumption and to automatically turn it on at the scheduled point of time of distribution of the information contents.

Further, the terminal station 30<sub>j</sub> may be configured 10 to automatically turn off again when normally completing the reception of the information contents scheduled to be distributed.

### Third Embodiment

Next, a mode of receiving information contents by a 15 user designating a time band and region will be explained.

First, the contents server 10 or the network node 20<sub>1</sub> averages and calculates the traffic load in the past for different regions in advance. For example, it sets 20 the relay area of a network node 20<sub>1</sub> as a calculated region. Alternatively, it sets an area comprised by relay areas of several network nodes 20<sub>1</sub> as the calculated region. Then, the contents server 10 or the network node 20<sub>1</sub> suitably predicts a traffic load by region and by 25 time band based on the schedule of distributing the

information contents scheduled until then and calculation of the traffic load and, based on this prediction, calculates communication fees for the respective regions/time bands.

5        The communication fees for each region/time band are broadcasted to the terminal stations 30<sub>1</sub> to 30<sub>m</sub> using a BCCH (broadcast control channel) for simultaneous broadcast of control signals from a base station to terminal stations in cellular wireless communications.

10       The terminal stations 30<sub>j</sub> suitably receive the information of the communication fees for each region/time band and store it in the storage 34 when performing processing (such as cell searching) necessary for connecting with the network.

15       Then, they display the information relating to the communication charges on the display/command input portion 35 when a user inputs an instruction to the effect of desiring to demand distribution of information contents etc. from the display/command input portion 35.

20       When an instruction of "in which time band and region the reception of the information contents is desired" is input by a user through the display/command input portion 35, a terminal station 30<sub>j</sub> generates region/time band information based on the input region and time band instruction, adds it to the demand for

distribution of information contents, and sends the result to the contents server 10.

The contents server 10 receiving this transmits an ACK by the above procedure to notify the terminal station 5 30<sub>j</sub> that the demand was received when the content of the demand for information distribution is acceptable.

Next, the contents server 10 pages the terminal station 30<sub>j</sub> in the region and time band designated by the terminal station 30<sub>j</sub>, and transmits the demanded 10 information contents when the terminal 30<sub>j</sub>, responds. That is, it confirms if there is a terminal station 30<sub>j</sub>, existing in the region designated by the user and where there is transmits the information contents to the terminal station 30<sub>j</sub>, through the network node 20<sub>i</sub>, 15 positioned in the designated region.

Note that when the terminal station 30<sub>j</sub>, does not respond to the paging, the contents server 10 tries again several times, then gives up distributing the information contents.

20 To avoid such giving up of distribution of the information contents as much as possible, information indicating a plurality of candidates for "in which time band and region reception of information contents is desired" transmitted from a terminal station 30<sub>j</sub>, to the 25 contents server 10 may be also set. Further, priority may

be added as well to the thus set plurality of candidates.

In this case, it is sufficient that the contents server 10 distribute the information contents in one of the region/time band among the candidates. Specifically,  
5 the contents server 10 tries to distribute the information contents for example from the one having the earliest time band among the candidates. When the candidate time bands are the same, it tries to distribute the information contents from the ones having the higher  
10 priorities.

Further, when the terminal station 30<sub>j</sub> does not respond to the paging in the designated region in the designated time band, the contents server 10, as a next stage, may refer to an HLR (home location register)  
15 storing information of the terminal stations 30<sub>j</sub>, provided in the cellular wireless communications system 1 and page a region where the terminal station 30<sub>j</sub> is considered to exist. In this case, when the terminal station 30<sub>j</sub> responds to the paging, a fee is charged for  
20 the traffic load of that region/time band.

Note that the paging referring to the HLR may also be performed without paging in the designated region.

#### Fourth Embodiment

Next, a mode will be explained where at the time of  
25 the above information distribution, a charge for the

distribution of the same information is changed in accordance with time limit of distribution.

A terminal station 30<sub>j</sub> is comprised to be able to select one of the time limits of distribution of "receive 5 distribution of information immediately" and "receive distribution of information before deadline" when sending a demand for distribution of information contents to the contents server 10.

When distribution of information is demanded 10 immediately, the contents server 10 judges whether the demand is "OK" or "NG" by considering the current traffic load. When "OK", it sends the terminal station 30<sub>j</sub> ACK, while when "NG", it sends NACK.

When OK, the server immediately secures a 15 communication line and distributes the information contents by using the existing method.

When NG, the server distributes NACK to notify that the information distribution is currently not possible. In response to this, the user sets an acceptable period 20 of time etc. of the information distribution as a distribution time limit and issues a request for information distribution again.

In this case, the communication fee for the information distribution is determined by the period of 25 time until the deadline of the information distribution.

Namely, the fee related to the distribution is the highest when the information is distributed immediately and becomes lower the later the information distribution time.

5 As explained above, according to the cellular wireless communication system 1 of the present invention, since it becomes possible not to provide information by real-time the distribution of information content can be scheduled for any period of time until the time limit for  
10 distribution, the traffic load in the time bands where the traffic load is high can be cut and the traffic load in time bands scarcely used before can be increased, so it becomes possible to obtain the effects of averaging the traffic load in terms of time and to effectively  
15 utilize communication facilities owned by a network operator fully for 24 hours as shown in Fig. 7.

Note that in Fig. 7, the traffic load shown by a thick line is a part indicating the traffic load of the communication system according to the present invention.

20 Also, due to this, since the network operator can much more effectively utilize the communication facilities, it becomes possible to lower the traffic load at peak times and reduce the communication costs.

Also, users of terminal stations become able to  
25 decide the deadline for information distribution by

themselves.

Namely, it becomes possible to finalize the point of time for information distribution in a user-led manner. As a result, it becomes possible for a user to receive 5 information contents at the desired period of time at a reasonable communication cost by considering the point of time for information distribution and the communication charges necessary for the information distribution.

Note that the present invention is not limited to 10 the embodiments and may be modified in various ways.

For example, the configurations of the terminal stations 30., etc. are not limited to above examples. Any configurations are possible.

For example, as a modification according to the 15 present invention, the terminal station 30., may estimate the size of the information contents desired by a user and calculate and display to the user by about how much time and communication charge reception of the information contents would be possible from the size of 20 the contents and a communications capacity able to be provided by the current system. Note that the size of the information contents may be estimated independently by the terminal station 30., in some cases, or the size of the information contents desired by the user may be 25 obtained after demanding the contents server 10 notify

the size of the information contents in other cases.

Further, in the cellular wireless communication system 1, the contents server 10 or the network nodes 20, 5 may inform users through the BCCH of up to how much a load of communications can be provided at the present in the region, and the terminal stations 30, may receive the information constantly and store it in a built-in storage for display to the users.

In addition, the configuration of the 10 display/command input portion 35 was made a liquid crystal panel, a speaker, and a key board in the present embodiment, however, the portion may be configured, for example, without a key board and to comprise other any input/output means.

15 Also, the configuration of the storage 34 may use a recording device for recording information on any recording medium other than the above recording media and recording devices such as HD, MD, MO, CD, etc.

Also, the above embodiment was explained taking as 20 an example the case where the configuration of a network was a cellular wireless communication system, however, the present invention is not limited to this and is able to be applied to any network systems.

Also, in the network of the present embodiment, only 25 one contents server was shown, however, two or more

5 servers may exist as in usual cases. Also, the configuration of the network is not limited to the form in the above embodiment where a contents server, network nodes, and terminal stations are connected in a tree-  
structure. It may be any form of network.

10 As explained above, according to the embodiments of the present invention, an information distribution system and method capable of averaging a traffic load over time and effectively utilizing communication facilities can be provided.

15 Also, a terminal apparatus, a server apparatus, a data reception method, and a data transmission method able to be used in such an information distribution system and to contribute to averaging of the traffic load in the network and effective usage of communication facilities can be provided.

#### INDUSTRIAL APPLICABILITY

20 The present invention can be applied to various network systems such as cellular wireless communication systems.

## CLAIMS

1. An information distribution system transmitting information based on a demand from a terminal apparatus from a server apparatus to the terminal apparatus.

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apparatus with respect to said request signal.

2. An information distribution system as set forth in claim 1, wherein

5 said second controller of said terminal  
apparatus generates a signal including time limit  
information indicating a time limit for distribution of  
said information as a request signal, and

3. An information distribution system as set forth  
in claim 2, wherein the first controller of said server  
15 apparatus detects a traffic load of said communication  
line and distributes the information at a period of time  
when the traffic load is small.

4. An information distribution system as set forth  
in claim 3, wherein  
20 said terminal apparatus further comprises an  
interface for providing information to a user, and  
estimates a period time until the time limit of  
distribution and a point of time when the traffic load is  
small, controls the system for notification of said  
25 estimated point of time to said terminal apparatus, and

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schedules so as to distribute the information at the estimated point of time, and

5        said second controller of said terminal apparatus controls the system for provision of the point of time of distribution notified from the server apparatus to the user through the interface.

5.       An information distribution system as set forth in claim 2, wherein said first controller of said server apparatus calculates an amount of charge for distribution 10 of information based on a length of the period of time until the time limit of distribution designated by the terminal apparatus and performs processing for charging the terminal apparatus based on the calculated amount of charge.

15       6.       An information distribution system as set forth in claim 2, wherein said second transceiver of said terminal apparatus communicates with the server through a wireless transmission base station.

7.       An information distribution system as set forth 20 in claim 6, wherein said first controller of said server apparatus calculates an amount of charge for distribution of information based on an efficiency of use of a communication resource in communication between said terminal apparatus and said base station and performs 25 processing for charging the terminal apparatus based on

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the calculated amount of charge.

8. An information distribution system as set forth in claim 1, wherein

5        said first controller of said server apparatus calculates cost information indicating communication costs based on a state of said communication line by region, by time band, or by time band for individual regions and controls the system for distribution of the calculated cost information to the terminal apparatus;

10        said second controller of said terminal apparatus generates, as said request signal, a signal including distribution information designating a desired region or time band or both desired for communication of information; and

15        said server apparatus schedules the system for distribution of information to the designated region and time band based on the request signal.

9. A terminal apparatus receiving distribution of information from a server apparatus,

20        said terminal apparatus receiving distribution of information from a server apparatus comprising:  
                  a transceiver for transmission to the server apparatus; and

25        a controller for generating a request signal for requesting the distribution of desired information,

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controlling the system for transmission of the requested information to said server through said transceiver, and controlling the system for reception of said information distributed by said server apparatus in a period of time 5 determined by said server apparatus with respect to said request signal.

10. A terminal apparatus as set forth in claim 9, wherein said controller generates a signal including time limit information indicating a time limit for 10 distribution of said information as a request signal.

11. A terminal apparatus as set forth in claim 10, further comprising an interface for providing information to a user, and

15 wherein the controller controls the system for provision of the point of time of distribution notified from the server apparatus to the user through the interface.

20 12. A terminal apparatus as set forth in claim 10, wherein said transceiver communicates with the server through a wireless transmission base station.

25 13. A terminal apparatus as set forth in claim 9, wherein said controller generates, as said request signal, a signal including distribution information designating a desired region or time band or both desired for communication of information.

14. A terminal apparatus as set forth in claim 13,  
further comprising an interface for providing information  
to a user, and

wherein said controller controls the system for  
5 provision to the user through the interface of cost  
information based on a state of said communication line  
by region, by time band, or by time band for individual  
regions as received from the server apparatus.

15. A terminal apparatus as set forth in claim 10,  
10 further comprising an interface for providing information  
to a user, and

wherein said terminal apparatus controls the  
system for provision to the user through the interface of  
a period of time until a time limit of distribution and  
15 time band where the traffic load of the communication  
line is small notified from the server apparatus.

16. A terminal apparatus as set forth in claim 9,  
further comprising

a counter for counting a period of time;  
20 a power supply for controlling the supply of  
power to each portion of the terminal apparatus and  
substantially making each portion valid or invalid; and  
a storage for storing information, and  
said controller receiving a scheduled point of  
25 time at which said information is to be distributed as

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notified by said server apparatus, stores said received scheduled period of time of distribution in said storage, starts the supply of power from said power supply and receives information distributed from said server

5 apparatus when the parts of the terminal apparatus are invalid in state near the scheduled period of time of distribution based on the scheduled point of time of distribution stored in said storage and the measured period of time.

10 17. A terminal apparatus as set forth in claim 16, wherein said controller stops the supply of power from said power supply and makes the parts of the terminal apparatus invalid in state when the reception of information distributed from said server apparatus ends.

15 18. A server apparatus transmitting information based on a demand from a terminal apparatus, said server apparatus comprising:

20 a transceiver for transmission to the terminal apparatus; and a controller for scheduling a point of time for distribution based on a state of a communication line used for distribution of information in accordance with a request signal requesting information from the terminal apparatus received at said transceiver and controlling the system for distribution of information for said

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request signal to the terminal apparatus through the transceiver at the scheduled point of time.

19. A server apparatus as set forth in claim 18,  
wherein an internal controller schedules the point of  
5 time for distribution of information based on time limit  
information indicating a time limit for distribution of  
said information included in said request signal and the  
state of a communication line.

20. A server apparatus as set forth in claim 19,  
10 wherein the controller detects a traffic load of said  
communication line and distributes the information at a  
period of time when the traffic load is small.

21. A server apparatus as set forth in claim 20,  
wherein said controller estimates a period of time until  
15 the time limit of distribution and a point of time when  
the traffic load is small, controls the system for  
notification of said estimated point of time to said  
terminal apparatus, and schedules distribute the  
information at the estimated point of time.

20        22. A server apparatus as set forth in claim 18,  
where said controller calculates an amount of charge for  
distribution of information based on a length of the  
period of time until the time limit of distribution  
designated by the terminal apparatus and performs  
25 processing for charging the terminal apparatus based on

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the calculated amount of charge.

23. A server apparatus as set forth in claim 18,  
where said controller calculates an amount of charge for  
distribution of information based on an efficiency of use  
5 of a communication resource in communication between said  
terminal apparatus and said base station and performs  
processing for charging the terminal apparatus based on  
the calculated amount of charge.

24. A server apparatus as set forth in claim 18,  
10 where said controller calculates cost information  
indicating communication costs based on a state of said  
communication line by region, by time band, or by time  
band for individual regions and controls the system for  
distribution of the calculated cost information to the  
15 terminal apparatus and schedules distribution of  
information to the designated region and time band based  
on the request signal.

25. An information distribution method for  
transmitting information based on a request from a  
20 terminal apparatus from a server apparatus to the  
terminal apparatus,

25 said information distribution method for  
transmitting information based on a request from a  
terminal apparatus from a server apparatus to the  
terminal apparatus, comprising the steps of:

having said terminal apparatus generates a request signal requesting distribution of desired information;

transmitting said request signal from said 5 terminal apparatus to said server;

having said server apparatus schedule a point of time for distribution based on a state of a communication line to be used for the distribution of information in accordance with a request signal

10 requesting information from said terminal apparatus;

distributing information for said request signal from said server apparatus to said terminal apparatus at the scheduled point of time; and

15 having said terminal apparatus receive said information distributed from said server apparatus.

26. An information distribution method as set forth in claim 25, wherein:

said request signal is a signal including time limit information indicating a time limit of distribution 20 of said information, and

said server apparatus schedules a point of time for distribution of the information based on the time limit information of said request signal and a state of a communication line.

25 27. An information distribution method as set forth

in claim 26, wherein said server apparatus detects a traffic load of said communication line and schedules distribution of said information for a period of time where the traffic load is small

5        28. An information distribution method as set forth  
in claim 26, wherein, when receiving said request signal,  
said server apparatus estimates a period of time until  
the time limit for distribution and a point of time where  
the traffic load is small, notifies the estimated point  
of time to said terminal apparatus, and distributes the  
information at the estimated point of time.  
10

29. An information distribution method as set forth in claim 27, wherein said server apparatus calculates an amount of charge for distribution of information based on 15 a length of the period of time until the time limit of distribution designated by the terminal apparatus and performs processing for charging the terminal apparatus based on the calculated amount of charge.

30. An information distribution method as set forth  
20 in claim 26, wherein said terminal apparatus communicates  
with the server through a wireless communication base  
station.

31. An information distribution method as set forth  
in claim 30, wherein said server apparatus calculates an  
amount of charge for distribution of information based on

an efficiency of use of a communication resource in  
communication between said terminal apparatus and said  
base station and performs processing for charging the  
terminal apparatus based on the calculated amount of  
5 charge.

32. An information distribution method as set forth  
in claim 25, wherein:

10        said server apparatus calculates cost  
information indicating communication costs based on a  
state of said communication line by region, by time band,  
or by time band for individual regions and distributes  
the calculated cost information to the terminal  
apparatus;

15        said terminal apparatus generates a signal  
including distribution information designating a region  
or time band or both desired for distribution of  
information; and

20        said server apparatus schedules distribution of  
information to the designated region and time band based  
on the request signal.

33. A data reception method for receiving  
distribution of information from a server apparatus,

25        said data reception method for receiving  
distribution of information from a server apparatus,  
comprising the steps of:

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generating a request signal requesting  
distribution of desired information;  
transmitting said requested information to said  
server; and

5 receiving said information distributed by said  
server apparatus in a period of time determined by said  
server apparatus for said request signal.

34. A data reception method as set forth in claim  
33, further comprising a step of generating a signal  
10 including time limit information indicating a time limit  
for distribution of said information as said request  
signal.

35. A data reception method as set forth in claim  
33, further comprising a step of generating a signal  
15 including distribution information designating a desired  
region or time band or both for distribution of  
information as said request signal.

36. A data reception method as set forth in claim  
35, further comprising a step of receiving from said  
20 server apparatus cost information indicating  
communication costs based on a state of said  
communication line by region or by time band or by time  
band for individual regions.

37. A data reception method as set forth in claim  
25 34, further comprising a step of providing the user with

a period of time until said time limit of distribution and point of time where the traffic load of the communication line is small as notified from said server apparatus.

5       38. A data reception method as set forth in claim 33, further comprising the steps of:

receiving a scheduled point of time for distribution of information from said server apparatus and

10       controlling a power supply of a receiver to enable reception of information distributed from said server apparatus near the scheduled period of time of distribution based on the received scheduled point of time of distribution and an internally measured period of 15 time.

15       39. A data reception method as set forth in claim 38, further comprising a step of controlling the power supply of the receiver to cut the supply of power to at least part of the circuits of the receiver when it 20 finishes receiving the information distributed from said server apparatus.

25       40. A data transmission method for transmitting information based on a request from a terminal apparatus, said data transmission method for transmitting information based on a request from a terminal apparatus,

comprising the steps of:

receiving a request signal requesting information from a terminal apparatus:

5 scheduling a point of time for distribution  
based on a state of a communication line used for  
distribution of information; and

transmitting the information for the request signal to the terminal apparatus at the scheduled point of time.

10 41. A data transmission method as set forth in  
claim 40, further comprising a step of scheduling the  
point of time for distribution of information based on  
time limit information indicating a time limit of  
distribution of information included in said request  
15 signal and the state of the communication line.

42. A data transmission method as set forth in  
claim 41, further comprising a step of detecting a  
traffic load of said communication line and scheduling  
distribution of said information in a period of time  
20 where the traffic load is small.

43. A data transmission method as set forth in  
claim 42, further comprising the steps of, when receiving  
said request signal, estimating a period of time until  
said time limit of distribution and point of time where  
25 the traffic load is small, notifying said estimated point

of time to said terminal apparatus, and scheduling distribution of said information at the estimated point of time.

44. A data transmission method as set forth in  
5 claim 40, further comprising a step of calculating an amount of charge for distribution of information based on a length of the period of time until the time limit of distribution and performing processing for charging the terminal apparatus based on the calculated amount of  
10 charge.

45. A data transmission method as set forth in  
claim 40, further comprising a step of calculating an amount of charge for distribution of information based on an efficiency of use of a communication resource in  
15 communication between said terminal apparatus and a wireless communication base station and performing processing for charging the terminal apparatus based on the calculated amount of charge.

46. A data transmission method as set forth in  
20 claim 40, further comprising a step of calculating cost information indicating communication costs based on a state of said communication line by region, by time band, or by time band for individual regions and distributing the calculated cost information to the terminal  
25 apparatus.

47. A data transmission method as set forth in  
claim 46, further comprising a step of scheduling  
distribution of information to a region and time band  
included in a request signal from said terminal  
5 apparatus.

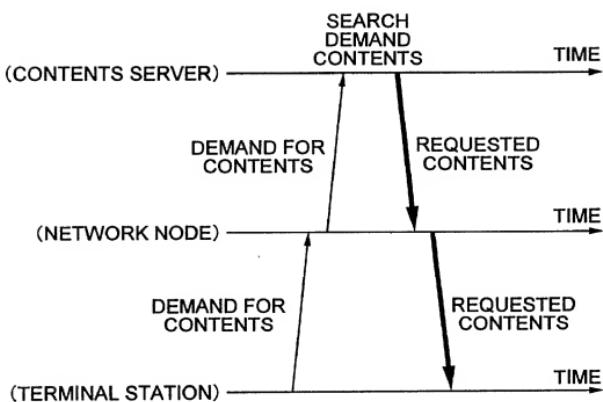
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## ABSTRACT

An information distribution system and method capable of averaging a traffic load over time and effectively utilizing communication facilities, wherein a terminal station 30 transmits to a contents server 10 a distribution request for desired information including information of time limit of distribution, and the contents server 10 receives the distribution request, estimates a time band where the traffic load is small in the communications system in the period until the time limit of distribution, pages the terminal station again at that period of time, and, if the terminal station is in a state able to receive the information content, transmits the requested information content to the terminal station 30 through a network node.

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FIG. 1



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FIG. 2 TRAFFIC LOAD

FIG. 2

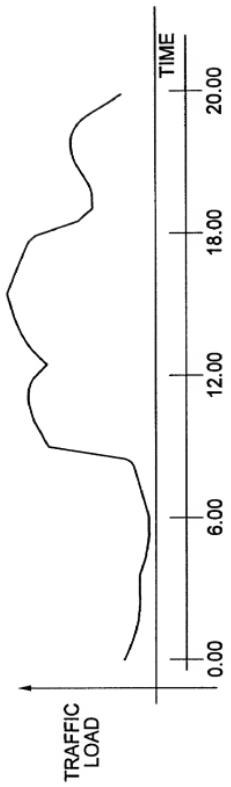


FIG. 3

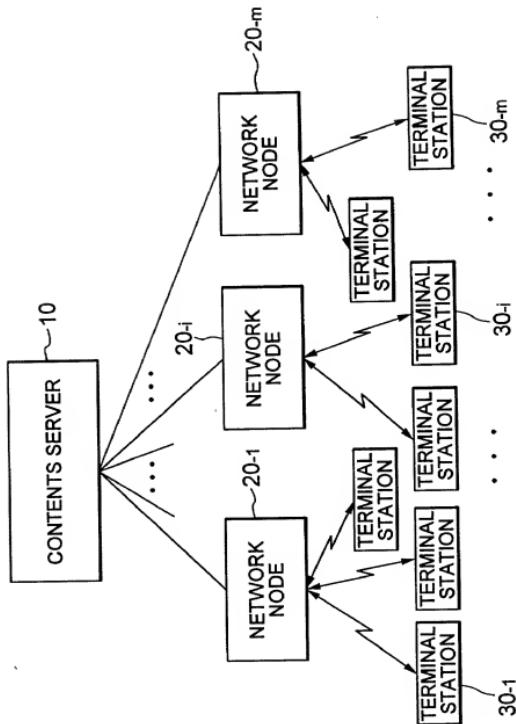


FIG. 4

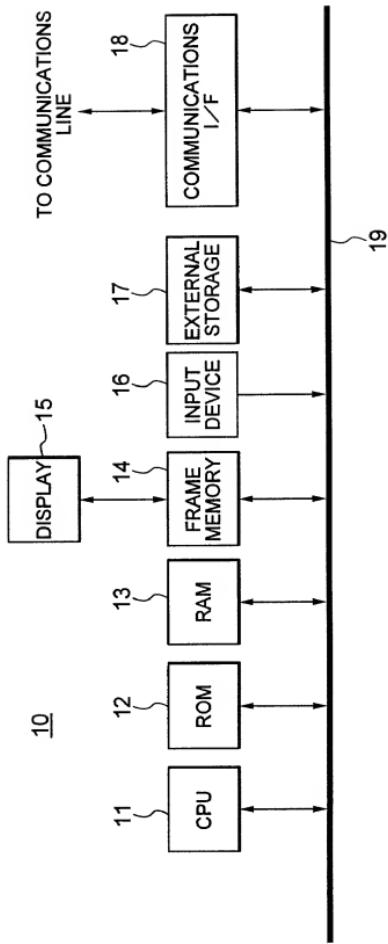


FIG. 5

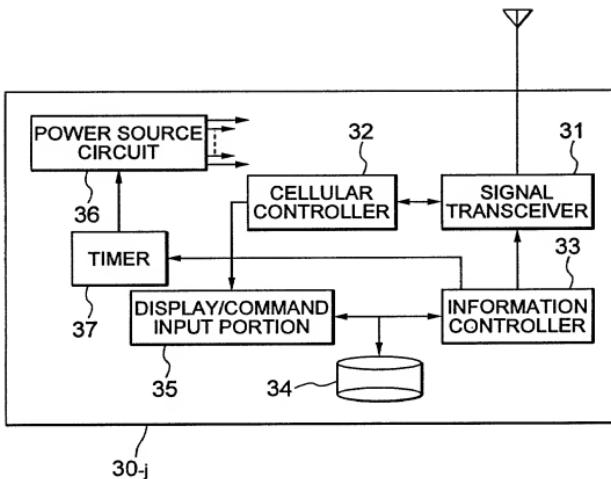


FIG. 6

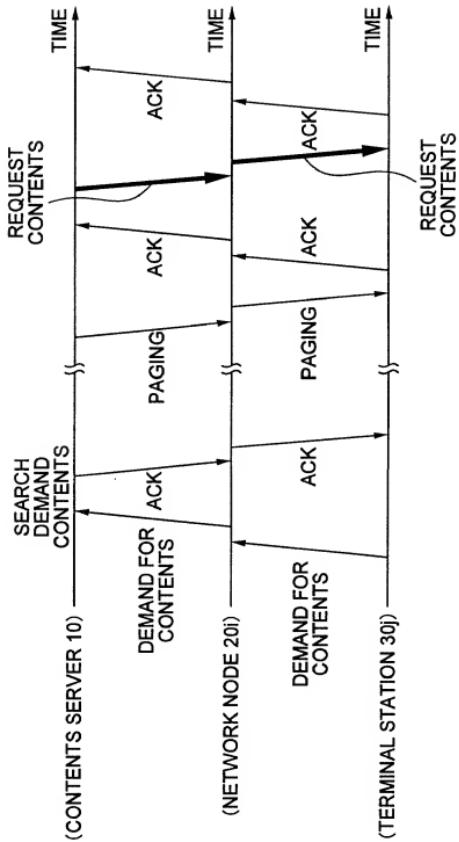
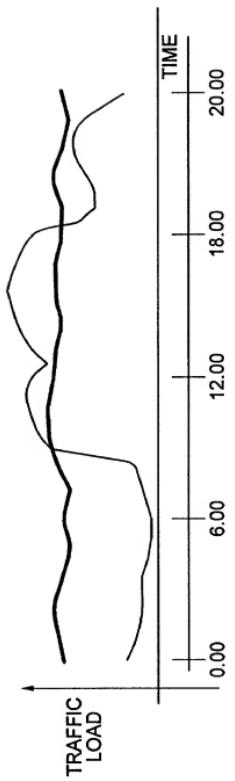


FIG. 7



## LIST OF REFERENCE NUMERALS

- 1.... cellular wireless communication system
- 10... contents server
- 20... network node
- 30... terminal station
- 31... signal transceiver
- 32... cellular controller
- 33... information controller
- 34... storage
- 35... display/command input portion
- 36... power supply circuit
- 37... timer

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

## Declaration and Power of Attorney for Patent Application

## 特許出願宣言書及び委任状

## Japanese Language Declaration

## 日本語宣言書

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As a below named inventor, I hereby declare that:

私の住所、郵便の宛先そして国籍は、私の氏名の後に記載された通りである。

My residence, post office address and citizenship are as stated next to my name:

下記の名前の発明について、特許請求範囲に記載され、且つ特許が求められている発明主題に関して、私は、最初、基先且つ唯一の発明者である（唯一の氏名が記載されている場合）か、或いは最初、基先且つ共同発明者である（複数の氏名が記載されている場合）と信じています。

I believe I am the original, first and sole inventor if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

INFORMATION DISTRIBUTION SYSTEM AND  
METHOD, TERMINAL APPARATUS, SERVER  
APPARATUS, DATA RECEPTION METHOD, AND DATA  
TRANSMISSION METHOD

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\_\_\_\_\_ であり、且つ  
\_\_\_\_\_ の日に補正された出願（該当する場合）

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PCT International Application Number PCT/JP00/00705  
and was amended on  
\_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

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Prior Foreign Application(s)

## 外国での先行出願

11-032065

(Number)  
(番号)Japan  
(Country)  
(国名)

PCT/JP00/00705

(Number)  
(番号)PCT  
(Country)  
(国名)(Number)  
(番号)(Country)  
(国名)(Number)  
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(番号)(Country)  
(国名)

私は、ここに、下記のいかなる米国特許出願についても、その米国法典第35編第119条(e)項の利益を主張する。

(Application No.)

(出願番号)

(Filing Date)  
(出願日)

私は、ここに、下記のいかなる米国出願についても、その米国法典第35編第120条に基づく利益を主張し、又米国を指定するいかなるPCT国際出願についても、その同法典第365条(c)に基づく利益を主張する。また、本出願の各特許請求の範囲の主張は、米国法典第35編第112条第1段に規定された結果で、先行する米国出願又はPCT国際出願に表示された場合においては、その先行出願の出願日と本国内出願またはPCT国際出願日の後の期間中に入手された情報で、遡及規則法典第37編規則1、56に定義された特許性に關する重要な情報について両者共存があることを承認する。

(Application No.)

(出願番号)

(Filing Date)  
(出願日)

私は、ここに表明された私自身の知識に従わる陳述が真実であり、且つ情報と信頼するに値づく陳述が、真実であると信じられるることを宣言し、さらに、故意に虚偽の陳述などを行った場合は、米国法典第18編第1001条に基づき、罰金または拘禁、若しくはその両方ににより処罰され、またそのような故意による虚偽の陳述は、本出願またはそれに対応して発行されるいかなる特許も、その有効性に問題が生ずることを理解した上で陳述が行われたことを、ここに宣言する。

I hereby claim foreign priority under Title 35, United States Code, Section 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT International application which designated at least one country other than the United States listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT international application having a filing date before that of the application for which priority is claimed.

Priority Not Claimed

## 優先権主張なし

9 February 1999  
(Day/Month/Year Filed)9 February 2000  
(Day/Month/Year Filed)

(Day/Month/Year Filed)

(Day/Month/Year Filed)

(Day/Month/Year Filed)

(Day/Month/Year Filed)

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)

(出願番号)

(Filing Date)  
(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or 365D of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of application.

(Status: Patented, Pending, Abandoned)  
(現況:特許許可、係属中、放棄)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## 日本語宣言書

委任状： 私は本出願を審査する手続を行い、且つ米国特許商標局との全ての業務を遂行するために、記名された発明者として、下記の弁護士及び／または弁理士を任命する。（氏名及び整理番号を記載すること）

## 書類送付先

直通電話連絡先：（氏名及び電話番号）

唯一または第一発明者氏名

1-00 Kazuyuki SAKODA

Inventor's signature

Date


 November 30, 2010

発明者の署名

日付

住所

国籍

郵便の宛先

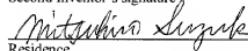
第二共同発明者がいる場合、その氏名

2-00 full name of second joint inventor, if any

Mitsuhiro SUZUKI

Second Inventor's signature

Date


 November 30, 2010

第二共同発明者の署名

日付

住所

国籍

郵便の宛先

(第三以下の共同発明者についても同様に記載し、署名すること)

**POWER OF ATTORNEY:** As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith (list name and registration number)

② WILLIAM S. FROMMER, Registration No. 25,506 and  
DENNIS M. SMID, Registration No. 34,930

Send Correspondence to:

WILLIAM S. FROMMER, Esq.  
c/o FROMMER LAWRENCE & HAUG LLP  
745 Fifth Avenue  
New York, New York 10151

Direct Telephone Calls to: (212) 588-0800  
To the attention of: WILLIAM S. FROMMER

Full name of sole or first inventor

1-00 Kazuyuki SAKODA

Inventor's signature

Date


 November 30, 2010

Residence

Tokyo, Japan

Citizenship

Japan

Post Office Address:

Sony Corporation

7-35 Kitashinagawa 6-Chome

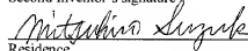
Shinagawa-Ku, Tokyo 141, Japan

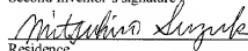
2-00 full name of second joint inventor, if any

Mitsuhiro SUZUKI

Second Inventor's signature

Date


 November 30, 2010


 November 30, 2010

Residence

Chiba, Japan

Citizenship

Japan

Post Office Address:

Sony Corporation

7-35 Kitashinagawa 6-Chome

Shinagawa-Ku, Tokyo 141, Japan

(Supply similar information and signature for third and subsequent joint inventors)